

FIELD REPAIRABLE HIGH TEMPERATURE SMOOTH WEAR COATING

ABSTRACT

A chemical composition and method for repairing a thermal barrier coating on a component designed for use in a hostile thermal environment, such as turbine, combustor and augmentor components of a gas turbine engine. The method repairs a thermal barrier coating on a component that has suffered localized damage to the thermal barrier coating. After cleaning the surface area of the component exposed by the localized spallation, a mixture of a ceramic composition comprising a ceramic powder in a binder is applied, preferably by spraying, to the surface area of the component. The binder is then allowed to dry to form a dried coating. Upon subsequent heating, the dried coating reacts to produce a ceramic-containing repair coating, wherein the coating comprises the ceramic powder in a matrix of a material formed when the binder was reacted. The binder is preferably a ceramic precursor material that can be converted immediately to a ceramic or allowed to thermally decompose over time to form a ceramic. The repair method can be performed while the component remains installed, e.g., in a gas turbine engine. The chemical composition is a liquid mixture that comprises ceramic material in at least two particle size ranges, as well as a nano-sized ceramic material and a binder that imparts thixotropic properties to the coating composition upon application to a component.